Air Force SBIR **Impact**

High Speed Holographic Recorder Documents Weapon Tests

Company:
North Dancer Labs, Inc.

Location:
Shelburne, VT

Employees:
4

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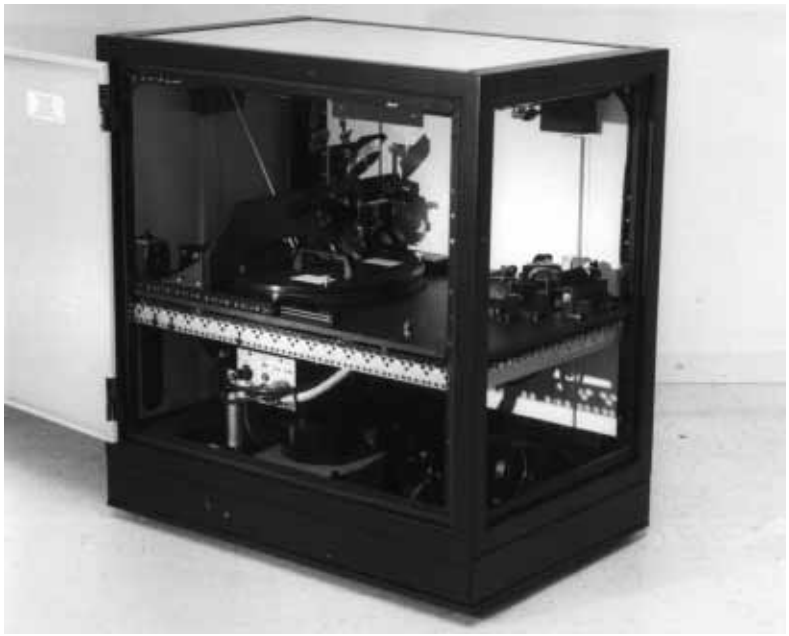

Air Force Requirement:

The Air Force Research Laboratory's (AFRL) Munitions Directorate needed a replacement for high-resolution, high-speed film cameras used to record weapons tests. The key requirement for a replacement system was for three-dimensional high-resolution images of the debris cloud and shock waves from projectiles and warhead fragments impacting various targets.

SBIR Technology:

North Dancer Labs (NDL) used Small Business Innovation Research (SBIR) contracts to develop a High Speed Holographic Recorder (HSHR) to address the Munitions Directorate requirement. The HSHR retains phase information utilizing holography. Holography offers high-resolution images that can be digitized after the event has occurred. The HSHR system recorded images with at least 5K x 5K-pixel resolution at a 50 to 500,000 frame per-second rate.

Unlike photography or direct digital imaging, the HSHR is capable of storing high-resolution images in densely scattered fields with recording rates of 500 kHz events in a cinematography 3-D format. The HSHR system, the world's first high-speed holographic movie camera, stores these high-resolution images as Fourier holograms in a disk format utilizing silver-halide film for permanent storage and analysis.

For more information on this story, contact Air Force TechConnect at 1-800-203-6451 or at www.afrl.af.mil/techconn/index.htm

Company Impact:

Numerous potential dual-use applications are seen for this technology. Possible applications include automotive crash testing; aircraft and engine testing; machine vision for manufacturing; web inspection (textiles, paper); rolled-goods inspection (steel, aluminum); sports medicine and human-performance monitoring. The HSHR system has applications in a number of research areas including combustion research, pressure-vessel testing, ballistics, particle imaging, wavefront characterization, injector and spray-component analysis, etc. The HSHR has been successfully installed and used at Air Force Research Laboratory and Arnold Engineering Development Center for shock imaging, impact tests, and flow visualization.

Company Quote:

"The SBIR program has enabled NDL, Inc. to develop a system that successfully met all the particulars in the solicitation and promises to be invaluable in acquiring and storing high-speed data for a host of possible commercial applications."

Charles Lysogorski
President
North Dancer Labs, Inc.

SBIR

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